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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,875	03/05/2002	Paul A. Morgan	M122-1798	9981

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EXAMINER

KILDAY, LISA A

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 07/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,875

Applicant(s)

MORGAN ET AL.

Examiner

Lisa A Kilday

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on election on 5/29/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 20,28,33 and 40-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1-19,21-27,29-32,34-39 and 52-59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

Applicant's election with traverse of species V and A1B1C1DE1 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the species restriction is a burden to the applicant. Applicant's representative argues in Paper No. 3 that the species restriction is 'excessive in the extreme' and an 'incredible abuse of discretion.' The examiner will not address these comments because they are unrelated to the merits of the case. For further guidance, the applicant's representative is reminded of §1.3 of the Patent Rules of the MPEP which states that applicants and their attorneys or agents are required to conduct their business with the PTO with decorum and courtesy.

Applicant argues that because of this restriction the applicant will have to file multiple costly separate continuation or division-like application filings to completely prosecute specific claims directed to each of the stated species. Applicant's point is not persuasive. A restriction is proper when one of two or more claimed inventions can support separate patents. See MPEP 806.04(f). Each patent can only be for one invention. See MPEP 806.04(h). Furthermore, the applicant pointed out that the instant specification contained at least 22 embodiments/inventions. Actually, the specification contains over 60 distinct inventions. Therefore, there is a serious burden on the examiner. See MPEP 803; 37 CFR 1.142.

Applicant argues that the species restriction is not based on the claims. This point is moot for seven reasons. First, species restrictions are based on the specification. Second, species restrictions give weight to the claims and drawings, which are part of the specification. Third, species restrictions do not have to follow the

Art Unit: 2829

claims; it is preferred that species restrictions look at the entire specification. Fourth, a species restriction is done to prevent future prosecution that includes claims previously presented in past applications, e.g. prevent double patenting. See MPEP 804. Fifth, a species restriction is done to narrow each application to a single invention. Sixth, an applicant is not precluded from presenting claims in an RCE or CIP that are drawn to non-elected inventions. But, an applicant cannot present claims that were already prosecuted. This concept is called election by original presentation. Seventh, upon allowance of an independent claim, some species may be rejoined with the original elected claims.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2, 16-18, 21, 24-7, 29-32, 34-39, and 53-59 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for etching at least a portion of the layer comprising at least one metal in elemental or metal alloy form, the metal comprising an element selected from the group consisting of Pt, Ru, Rh, Pd, Ir, and mixtures thereof, does not reasonably provide enablement for wherein the halogenide is in a liquid solution and for wet etching of the [noble] metal. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with

Art Unit: 2829

these claims. It is well known in the art that in order to etch a noble metal, there must be a complex and an oxidizer in order to etch a noble metal. Noble metals are insoluble and unreactive. The instant application fails to teach a complex and an oxidizer when wet etching the noble metal. Saito et al. (6,144,871) teaches that Platinum films cannot be patterned by wet etching, only by dry etching or ion milling (col. 9, lines 60-63; col. 12, lines 27-29). Evans (6,290,736) teaches that wet etching of a noble metal is problematic (col. 1, lines 39-46). Fraser et al. (4,039,698) teaches that wet etching noble metals leads to poor patterning. Prior art explicitly teaches away from wet etching a noble metal. Additionally, the instant specification fails to disclose a complex and an oxidizer that is used during wet etching. Therefore, the specification does not enable any person skilled in the art to perform wet etching of a noble metal.

Specification

The disclosure is objected to because of the following informalities: chemical formulas, should be written as: "Silicon nitride" not --silicon nitride--. When an element occurs alone such as "Platinum", it should be capitalized. If it is the second ion in a chemical compound, it does not have to be capitalized. Capitalize all elements.

Appropriate correction is required.

Claim Objections

Claims 1-19, 21-27, 29-32, 34-39, 52-59 are objected to because of the following informalities: chemical formulas, should be written as: "Silicon nitride" not --silicon nitride--. When an element occurs alone such as "Ruthenium", it should be capitalized.

If it is the second ion in a chemical compound, it does not have to be capitalized.

Capitalize all elements.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-15, 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takeshi (JP 08-153707). Takeshi discloses a semiconductor method comprising: providing a semiconductor substrate (11) comprising a layer (14) comprising at least one metal in elemental or metal alloy form, the metal comprising an element selected from the group consisting of Pt, Ru, Rh, Pd, Ir, and mixtures thereof; and etching at least a portion of the layer in a halogenide, O₃ and H₂O comprising ambient (abstract; means; ¶¶14, 18, 20, 23; claims: 1-7).

Takeshi discloses wherein the ambient temperature comprises from about 5-200C (¶16)

Takeshi discloses wherein at the at least one metal is in elemental form (¶23).

Takeshi discloses wherein at the at least one metal is in metal alloy form (abstract; technical problem; ¶23).

Takeshi discloses wherein at least one metal in the metal alloy form and includes at least two metals selected from the group consisting of Pt, Ru, Rh, Pd, and Ir (¶23).

Art Unit: 2829

Takeshi discloses wherein at least one met is in metal alloy form and includes at least one metal selected from the group consisting of Pt, Ru, Rh, Pd, and Ir, and at least one other not selected from the group consisting of Pt, Ru, Rh, Pd, and Ir (¶23).

Takeshi discloses wherein the layer consists essentially of said at least one metal in elemental or metal alloy form (abstract; ¶23).

Takeshi discloses wherein the element comprises Pt (¶23).

Takeshi discloses wherein the element comprises Ru (abstract; ¶23).

Takeshi discloses wherein the element comprises Rh (¶23).

Takeshi discloses wherein the element comprises Ir (¶23).

Takeshi discloses wherein the etching ambient comprises atmospheric pressure (¶15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 16-18, 21-32, 34-39, and 52-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshi in view of Evans (6,290,736).

Takeshi discloses a semiconductor method comprising: providing a semiconductor substrate (11) comprising a layer (14) comprising at least one metal in elemental or metal alloy form, the metal comprising an element selected from the group consisting of Pt, Ru, Rh, Pd, Ir, and mixtures thereof; and etching at least a portion of

Art Unit: 2829

the layer in a halogenide, O₃ and H₂O comprising ambient (abstract; means; ¶¶ 14, 18, 20, 23; claims: 1-7). However, Takeshi fails to teach wherein the halogenide is provided to the portion of the layer in a liquid solution. However, Evans teaches etching a noble metal with a halogenide that is liquid (col. 2, lines 30-40, lines 64-67; col. 3, lines 40-67; col. 4, lines 8-47; step 102; step 104). Therefore it would have been obvious at the time of invention to modify the process of Takeshi to include a halogenide that is liquid because liquid halogenide chemically polish the noble metal surface with a smooth surface finish.

Takeshi discloses etching a portion of a noble metal layer (14) with a halogenide. However, Takeshi fails to teach that the halogenide is in a liquid salt solution, such as NaCl, KCl, and CaCl₂. However, Evans teaches etching a noble metal with NaCl, KCl, and CaCl₂ (aqueous), (col. 5, lines 35-45; col. 4, lines 9-45). Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the process of Takeshi because providing a halogen, such as Chlorine, in a strong base form of NaCl, KCl, and CaCl₂ provides a strong base that would effectively react with noble metals.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fechner (DE 43 33 935), Kato et al. (JP51029238), and Yahagi et al. (JP361170580A).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo,

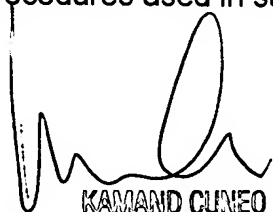
Art Unit: 2829

can be reached on (703) 308-1233. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

6/18/03



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